

REMARKS

The Office Action mailed December 28, 2009 has been carefully considered. Reconsideration in view of the following remarks is respectfully requested.

Amendment to Claims 5, 8, and 10-11

Claims 5, 8, and 10-11 have been amended for improved clarity and grammatical accuracy. The amendment does not raise any issues beyond those already considered by the Examiner.

No amendment made is related to the statutory requirements of patentability unless expressly stated herein. No amendment is made for the purpose of narrowing the scope of any claim, unless Applicant argues herein that such amendment is made to distinguish over a particular identified reference or combination of references. Any remarks made herein with respect to a given claim or amendment is intended only in the context of that specific claim or amendment, and should not be applied to other claims, amendments or aspects of Applicant's invention.

Rejection(s) Under 35 U.S.C. §102

Claims 1-9 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Dujardin et al. (U.S. pat. no. 6274234). The Examiner argues that Dujardin discloses a set of nano-objects "in a metallic state," wherein "metallic state is defined as a metal made . . . partly or entirely of metal, or having a characterize [sic] of metal." (Office Action at 2). Applicants respectfully disagree. Dujardin discloses what is translated as "atomic wires," but these "atomic wires" are not metallic. The term "wires" is a translation from the original French application (FR 96 15435) of " *fils atomiques*," a word that does not imply metallicity and might be better translated as "atomic threads" or "atomic lines." The authors of Dujardin published an article, submitted in an Information Disclosure Statement dated 8/18/2008, that uses the term "atomic lines." See Soukiassian, P. et al., "Highly Stable Si Atomic Line formation on the β -SiC(100) Surface," *Physical Review Letters*, vol. 79, No. 13, pp. 2498-501.

In fact, the atomic threads ("wires") of Dujardin are non-metallic—they are semi-conducting (col. 7, ll. 39-40). Rather, Dujardin states that these threads are "straight chains of dimers of an element chosen from amongst SiC and C" (Dujardin, Abstract). As is known in the art, threads composed of silicon and/or carbon are not metallic, and might be considered

semiconducting. Dujardin does not describe how to make metallic wires as disclosed and claimed in the present application.

It will be appreciated that, according to the M.P.E.P., a claim is anticipated under 35 U.S.C. §102 only if each and every claim element is found, either expressly or inherently described, in a single prior art reference.¹ The aforementioned reasons clearly indicate the contrary with respect to claim 1. Dependent claims 2-9 inherit all the limitations of claim 1, and therefore are not anticipated by Dujardin. In addition, amended claim 5 is also novel because Dujardin does not disclose three-dimensional clusters in a metallic state. The structures identified by the Examiner in Figure 5 of Dujardin are composed of carbon and silicon, and are not metallic. Because claim 6 inherits the limitations of amended claim 5, claim 6 is also patentable over Dujardin.

Claim 7 is additionally patentable because Dujardin does not disclose nano-objects that are parallel atomic threads in a metallic state or parallel single-dimensional nanometric strips in a metallic state. As amended claim 8 inherits the limitations of claim 7, it is also patentable over Dujardin. Moreover, as to claim 8, Dujardin does not disclose metallic atomic threads or single dimensional metallic strips that are perpendicular to the non-metallic parallel threads of silicon.

Claim 9 is additionally patentable because Dujardin only discloses the formation of semi-conducting atomic threads on non-passivated areas of the surface. It does not disclose the formation of metallic-state atomic threads on non-passivated areas of the surface.

Therefore, withdrawal of the 35 U.S.C. §102 rejection based on Dujardin is respectfully urged with respect to claims 1-9.

Amended claims 10-11 rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Neuhaus et al. (U.S. pat. no. 6853087). The Examiner argues that Neuhaus discloses a nano-object. However, Neuhaus discloses the formation of electrical contacts between a chip and a chip carrier. It describes conductive “hard particles” 218/318/418/518 which are placed between the contacts to aid in making an electrical connection. These hard particles, however, are not disclosed to be nano-objects. They are also not disclosed as having been formed on the substrate. Rather, “[h]ard particles 318 are affixed” to the surface of the binding pads (col. 14, ll. 33-34). For example, the particles may be applied by spraying and stenciling (col. 15, ll. 44-45). Therefore, Neuhaus is not germane to the present invention involving nano-objects formed on

¹ Manual of Patent Examining Procedure (MPEP) § 2131. See also *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

the surface of a substrate. Consequently, withdrawal of the 35 U.S.C. §102 rejection based on Neuhaus is respectfully urged with respect to claims 10-11.

Conclusion

In view of the preceding discussion, Applicants respectfully urge that the claims of the present application define patentable subject matter and should be passed to allowance.

If the Examiner believes that a telephone call would help advance prosecution of the present invention, the Examiner is kindly invited to call the undersigned attorney at the number below.

Please charge any additional required fees, including those necessary to obtain extensions of time to render timely the filing of the instant Amendment and/or Reply to Office Action, or credit any overpayment not otherwise credited, to our deposit account no. 50-3557.

Respectfully submitted,
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